APPENDIX A

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF FLORIDA
TALLAHASSEE DIVISION

HARRINGTON MANUFACTURING CO., INC.,	)	
	)	TALLAHASSEE CIVIL
Plaintiff,	)	ACTION
VS.	)	NO. 1443
IDAS B. WHITE,	)	MEMORANDUM DECISION
Defendant.	)	

PRELIMINARY STATEMENT OF THE ACTION

Plaintiff, Harrington Manufacturing Co., Inc., is a North Carolina Corporation and owner of the United States Patent No. 3,327,745, issued on June 27, 1967. The defendant is a resident of Florida. This is an action for damages to compensate for an alleged infringement, an injunction against further infringement and an award of costs and attorneys' fees. The answer of defendant denies infringement and asserts as an additional defense the invalidity of Patent No. 3,327,745. Additionally, by counterclaim the defendant asks that the Court adjudge that the patent of plaintiff is invalid and that the Court declare the right to defendant to continue his operations without interference by or from plaintiff.

On October 5, 1966, Fred W. Meece and Frank B. Dew made application for a patent of a tree cutter device resulting in

the issuance of the patent on June 27, 1967. The rights of the inventors were assigned to the plaintiff. A copy of the patent including the specifications, claims and drawings are attached hereto. There are ten (10) claims set forth in the patent and it is specifically alleged by plaintiff that claims 1, 2, 5, 7 and 10 are infringed by defendant. The claims 1 and 2 are "independent" claims, whereas the remaining claims are "dependent" claims.

FINDINGS OF FACT

[1] In mid-1965, Meece and Dew made a decision to attempt to improve upon the art of felling trees. They contend that they were unaware at this time that many other persons and companies had already developed "tree shears" for cutting down trees, though they were familiar with the many problems of known tree cutting operations. Although Meece and Dew claim that they were unaware of prior art, because of the obvious similarity of the Meece-Dew shear head to shear heads found in prior art, this Court finds that Meece and Dew were familiar with prior art in the field.

[2] The Meece-Dew invention described in the patent in suit involved a combination of structural components to create a hydraulically operated tree shear for mounting on the front end of a tractor or other vehicle. Meece and Dew do not claim to have conceived the idea of providing a tractor mounted tree shear inasmuch as the patent expressly states in Column 1:

> "The basic idea of mounting hydraulically driven tree shears on a tractor and using it to cut down trees is now about thirty years old."

The combination arrived at by Meece and Dew includes a "shear head" consisting of a fixed jaw having a shearing blade pivotally mounted adjacent to the jaw for movement toward and away from the fixed jaw under the control of hydraulic cylinders. The "shear head" is mounted on the front end of the tractor. The front end mounting of the shear head is accomplished by the use of a "C-frame" consisting of two parallel supporting

arms rigidly interconnected to one another at their front ends by an elongated horizontally disposed beam that extends completely across the front end of the tractor. Each of the parallel supporting arms is pivotally attached to the tractor at its rear end and the "C-frame" is adapted to be moved up and down under the control of a hydraulic cylinder. The shear head is also pivotable being connected to the horizontally disposed beam by pivotable members. This pivotable interconnection between the shear head and the elongated beam is claimed to be an important feature of the novelty of the invention permitting the arrangement to achieve the "basic concept" which is described as a means for varying the angle of the plane of the jaw members with respect to the beam. Great emphasis is placed upon this "basic concept" and it is said to be adjusted through cooperation between the pivotal interconnection and the "flexible interconnection means." In the drawings contained in the patent, the"flexible interconnection means" are shown to be a cable and a chain. Other alternative flexible interconnection means are described in the specifications and the claims. It is noted that in claim 10 of the patent, hereinafter referred to as the "Meece patent", that one of the alternative means "comprises an adjustable hydraulic cylinder."

[3] The claims in suit constitute two independent claims[1] and three dependent claims.[2] The independent claims contemplate combinations of structures comprising a particular type of shear head, i.e., having a pair of fixed jaw members, a cutting blade pivotally mounted with respect to the fixed jaw members and a blade for moving the cutting blade relative to the jaw members. In addition, the claimed combinations of structure include a special front mounting assembly as was more fully described in paragraph 2 of the Findings of Fact. The claims in suit in addition to defining in some detail the special shear and special mounting arrangement employed, further

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[1] Claims 1 and 2

[2] Claims 5, 7 and 10

define a particular structural arrangement for interconnecting the defined shear head to the defined mounting structure. This system functions as the result of interaction between the pivotal connections and the "flexible interconnection means."

[4] The combinations recited in claims 1 and 2 are defined in further detail in claims 5, 7 and 10:

(a) Claim 5, which depends from claim 2, states that the means for raising and lowering the beam comprises a hydraulic cylinder and piston.

(b) Claim 7, which also depends from claim 2, states that the "flexible interconnection means" includes an upstanding post and that "a flexible element" extends between this upstanding post and the fixed jaw of the shear head.

(c) Claim 10 depends from claim 1 and says that the "flexible interconnection means" comprises "an adjustable hydraulic cylinder."

[5] It is plaintiff's position that the combination of elements defined in each of claims 1 and 2 and the more detailed combinations of claims 5, 7 and 10 are embodied in the accused White tree shears.

[6] In the late summer of 1965, Meece and Dew began building a tree shear device in an attempt to find an effective means of cutting down trees. By September, 1965, they had completed and had in use two tree shears. This initial device included a conventional cutter head or shear head in which the cutting blade was hydraulically [sic] pivoted with respect to a pair of fixed jows. Additionally, the shear head was pivotally attached to a cross-beam between a pair of parallel arms in the form of a C-frame and was supported off the ground by a chain.

[7] Meece explained at trial that when he and Dew adopted the chain as the support linkage for the shear head in their tree shear, they did not want a rigid connection. They wanted a support linkage which would "give". The "flexible interconnection means" of the Meece patent tree shear was designed to perform at least two functions: to permit free

pivotal movement of the shear head and to serve to limit the downwardmost position of the arc through which the shear head could move.

[8] Meece and Dew had by December, 1965, built a third tree shear which closely resembled the initially built device except that the chain supporting linkage was replaced by a combination cable and steel bar with adjustment holes. Plaintiff, having learned of the Meece-Dew shear, entered into a contract in February, 1966, with Meece and Dew whereby plaintiff would manufacture and sell this device and attempt to patent it. By April, 1966, plaintiff commenced the manufacture and sale of the tree shear which was substantially identical to the Meece-Dew machine and included the combination cable and steel bar with adjustment holes as the supporting linkage between the shear head and mounting assembly to provide a floating arrangement for the shear head.

[9] After manufacture of the shear had been commenced in February, 1966, plaintiff by April and May, 1966, began shipment and delivery of actual equipment. In June, 1966, the shear had reached northwest Florida and was displayed in Panama City, Florida.

[10] For many years defendant White, a machine shop operator in Blountstown, Florida, had designed and built for the logging industry numerous pieces of equipment including hydraulically operated equipment.

[11] In May, 1966, defendant met with certain third parties who requested that he build several hydraulically operated tree shears which could be mounted on the front end of tractors. Defendant then started designing and building the requested hydraulically operated tree shear which was field-tested on July 30, 1966. Simultaneously with construction of this tree shear defendant was building another device which was demonstrated in Macon, Georgia, in late August, 1966. These devices were soon followed by a third device in September, 1966, which was sold by defendant to John Davis who accepted on behalf of his company, Georgia Timberlands.

[12] The defendant's tree shear included a conventional shear head which was pivotally mounted to the tractor C-frame. Although his first unit included three chain links as part of the support linkage, defendant, upon field-testing the machine, found the chain links unsatisfactory and eliminated the flexible component in the support linkage and replaced it with a rigid interconnection established by a double acting hydraulic cylinder as the sole element of the support linkage.

[13] As constructed the tree shear of the defendant White is approximately one half the weight of the tree shear of the plaintiff.

[14] Defendant gave four reasons for his adopting a double acting hydraulic cylinder as the sole element of the supporting linkage. First, he wanted a complete power controlled machine which could apply power to any part of the tree shear unit and be controlled from the vehicle cab. Secondly, he wanted the tree shear to fold up and make the entire vehicle shorter in length for increased maneuverability. Next, he wanted to be able to apply a downward pressure to the shear head in order to crush brush, snow, etc. around the tree trunk so that the tree could be sheared as close to the earth's surface as possible. Lastly, he wanted to provide means to move readily the center of gravity of the entire machine as far back as possible for travelling purposes.

[15] The defendant's tree shear was also equipped with "toter brackets" which are objects welded on the C-frame and serve to limit the downwardmost position of the arc through which the shear head can pivot. The shear head is designed to engage the "toter" or stop brackets before the piston head bottoms in the support cylinder. This arrangement insures that the shear head is locked when in its downwardmost position by reason of the downward force to the shear head applied by the support cylinder against the brackets; too, it provides a safety feature in that the weight of the shear head is carried by the "toter brackets" and not by the double acting hydraulic cylinder.

[16] After the first field demonstration of the White tree shear in late July, 1966, Joseph Harrington, President of plaintiff corporation, learned of defendant's development work and in the following month he visited defendant's shop in Blountstown, Florida. During this visit defendant explained his tree shear to Harrington who in turn requested defendant to build hydraulic cylinders to be used by plaintiff to actuate the blade in its tree shear. Both parties stated their intention to secure patent rights on their respective tree shear machines.

[17] During this time plaintiff had photographs taken of the first White tree shear and one of plaintiff's agents observed the construction of some of defendant's first tree shear machines. The application which issued into the Meece patent was not filed until some forty days after the first Harrington-White meeting and some time after Harrington had full disclosure of defendant's tree shear.

[18] Contact between plaintiff and defendant did not cease with the August, 1966, meeting. Other meetings culminated in plaintiff's attempt to purchase the White invention and patent rights.

[19] In 1968, White sold his invention and patent rights to Timberjack Machines, Ltd. At the time the White contract was negotiated and signed, Timberjack was aware of and had evaluated the Meece patent in suit.

[20] In the fall of 1968, plaintiff learned that defendant had sold his invention and patent rights to another company. Plaintiff then filed this lawsuit and for the first time began building a tree shear which included a double acting hydraulic cylinder in place of the flexible cable for the supporting linkage.

[21] The Examiner in the United States Patent Office who considered and approved the Meece patent application also considered and approved the White patent application. The Meece patent was considered by the Patent Office Examiner before he granted the White patent.

[22] The two Busch patents and the two McFaull patents were before the Examiner during the prosecution of the Meece patent application. The Examiner found that the claims in suit were not anticipated by or rendered obvious to any of these patents taken alone or in any logical combination with one another.

[23] In tree-cutting systems constituting the prior art at the time the Meece invention was conceived, there was no combination of shear head, mounting structure and interconnection of the two which achieved the same operative result with the degree of simplicity, efficiency and commercial success as did the patent in suit. In short, none of the arrangements contained in those patents either disclosed as prior art to the Patent Examiner or cited as references by him contemplate a pivotal mounting of the shear head used in interation with a "flexible interconnection means" as used in the Meece patent.

[24] The defendant tree shear employs a double acting hydraulic cylinder as the sole element of the supporting linkage between the shear head and mounting assembly. The testimony of the qualified expert witnesses establishes by a preponderance of the evidence that the double acting hydraulic cylinder and circuit as used in the White tree shear is a rigid and not a flexible interconnection. One of plaintiff's own experts admitted that a double acting hydraulic cylinder in a properly designed circuit is "locked in position."

[25] Even though such factors as cavitation and entrained air may be involved in double acting hydraulic cylinders and circuits, the preponderance of the evidence established that the presence of these factors is undesirable and is avoided in properly designed hydraulic systems. The Court finds that the small degree of movement which might be encountered as a result of these factors in the double acting hydraulic cylinder support linkage of defendant's tree shear would be insufficient to allow the shear head to "freely move" or "give" as required for the "flexible" support linkage of the Meece patent and the Meece patent claims.

[26] Plaintiff claimed that defendant copied the Harrington TF-1 tree shear. Even if White did copy the work of Meece and Dew in White's first two shears, the White shear as finally developed has a rigid connecting member. The earlier White shear was not patented by White.

CONCLUSIONS OF LAW

VALIDITY

[1] This Court has jurisdiction of the subject matter in suit and over the parties. Title 35, United States Code, Section 281; Title 28, United States Code, Sections 1338(a) and 1400(b).

[2] The plaintiff, Harrington Manufacturing Company, Inc., is the owner of the entire right, title and interest in and to the patent in suit and has the right to maintain suits for infringement of such patent.

[3] The paramount issues for decision by the Court in this case are simply whether United States Patent No. 3,327,745, owned by palintiff is valid; and if valid, if it has been infringed by the tree shear made and sold by defendant. It has come to be recognized, however, that of the two questions, validity has the greater public importance. *Sinclair and Carroll Co., Inc. v. Interchemical Corp.*, 325 U.S. 327 (1945). For this reason this Court considers initially the issue of validity.

[4] In *Beckman Instruments v. Chemtronics*, 428 F. 2d 555, 561 (5th Cir. 1970), cert. denied, ____ U.S. ____ (1970), the Court stated:

> "The three germinal tests of patent validity are utility, novelty, and nonobviousness. ***. Section 102, which pertains to novelty, requires that the patentee be the original inventor of the object claimed in his patent, and also that the invention not have been known or used by others before his

> discovery of it. Thus one obviously cannot be the original inventor if someone else had described or used the subject matter of the claims before the earliest moment to which he can trace his invention. ***. Furthermore the prior art is to be considered as covering all uses to which it could have been put. Thus a patent claiming a device that has already been put to use, albeit in a different manner, is invalid; in order to be valid over the prior art, it must claim not novel use, but novel conception. ***."

[5] Under Title 35, United States Code, Section 282, the patent in suit is presumed to be valid. In the absence of clear and convincing evidence to the contrary, the law presumes that the Patent Office correctly issued the patents. *The Spee-Flo Mfg. Corp. v. Braniff Airways, Inc.*, 430 F. 2d 74 (5th Cir. 1970); *Stamicarbon N. V. v. Escambia Chemicals*, 430 F. 2d 930 (5th Cir. 1970); *Hunt Industries, Inc. v. Fibra Boats, Inc.*, 299 F. Supp. 1145 (S.D. Fla. 1969).

[6] The burden of invalidity rests on the party asserting it. Title 35, United States Code, Section 282;*Hunt Tool Co. v. Lawrence*, 242 F. 2d 347, 351 (5th Cir. 1957).

[7] In *The Spee-Flo Mfg. Co.*, supra, at 81, it was said that:

> "[u]nless the subject matter of a patent involves both novelty and invention, the patent is invalid, for mere novelty without invention is insufficient."

[8] The patent in suit is not anticipated by the prior art. In this litigation the most pertinent prior art includes the Busch patents, Nos. 2,876,816 and 3,059,677, the McFaull patents, Nos. 2,697,459 and 2,565,252, the Burke patent, No. 638,553 and the French patent, No. 1,313,995. All of these patents were before the Examiner in the United States Patent Office during the prosecution of the Meece application. The Examiner in his allowance of the claims was of the view that the claims in suit were distinct from these four references and that they were not

anticipated by or rendered obvious by any of these patents. In this light, the presumption of validity is strengthened where it appears that the Patent Office fully considered and distinguished the prior art patents principally relied upon as anticipation. *Jeoffroy Mfg. Inc. v. Graham,* 219 F. 2d 511 (5th Cir. 1955).

[9] Defendant has failed to overcome the presumption of validity by clear and convincing evidence to the contrary.

[10] It should be emphasized that the invention in this suit involves a combination of structures. "It is well settled that a combination is patentable, though each of its constituent elements was well known in the prior art, if the combination produces a new and useful result and would not have been obvious at the time of the invention to a person having ordinary skill in the art . . . ." *Williams Bit and Tool Co. v. Christensen Diamond Produce Co.,* 399 F. 2d 628, 632 (5th Cir. 1968).

[11] In examining patent claims the Court should "construe them narrowly so as to avoid the prior art if such a construction can reasonably be adopted." *Beckman Instruments,* supra, at 561.

[12] Although certain constituent elements of the Meece patent were known in the prior art, the flexible interconnection means of the Meece patent produced a new and useful result and did not anticipate the prior art. It is this act of selection and arrangement of elements which, if it overcomes defects in the prior art, produces the invention and renders it novel. *B. G. Corp. v. Walter Kidde & Co.,* 79 F. 2d 20 (2d Cir. 1935).

[13] The Court in *Johns-Manville v. Cement Products,* 428 F. 2d 1381, 1385 (5th Cir. 1970), in reaching its determination that the patent in suit was rendered obvious by the prior art said:

> "In *Graham v. John Deere Co.,* 1966, 383 U.S. 1, *** the Court construed the language of 35 U.S.C.A. §103 to mean that a patent may not be obtained, although the invention has not been identically disclosed in the prior art, when the differences

> between the patent and the prior art are such that they would have been obvious to a person having ordinary skill in the art to which the subject matter pertains. ***.
>
> "In determining the legal question of the validity or invalidity of a patent due to obviousness *Graham* requires that the Court establish the scope and content of the prior art, the differences between the prior art and the claims at issue, and the level of ordinary skill in the pertinent art at the time of the invention under attack."

[14] The Meece invention at the time of its inception exceeded the level of ordinary skill in the pertinent art and was an unobvious advancement in the art. When compared to the prior art the Meece invention experienced greater commercial success than any of its forerunners had enjoyed. The Court may consider this circumstance in its determination of whether the patent in suit is rendered invalid as obvious. *Graham v. John Deere*, supra; *Kardulas v. Florida Machines Products Co. et al*, ____ F. 2d ____ , 5th Cir. 1971 [Slip No. 29514, February 9, 1971].

[15] This Court concludes that the Meece patent is valid and is neither anticipated by nor rendered obvious by the prior art.

INFRINGEMENT

[16] The tree shear disclosed in the Meece patent incorporates a supporting linkage which interconnects the shear head and the mounting assembly. As illustrated in the Meece patent drawings, this supporting linkage can be either (1) a chain or (2) a cable and bar combination. The claims of the Meece patent in subsection (f) of claim 1 and subsection (d) of Claim 2 define this supporting linkage as a "flexible interconnection means" and then recite specific functions to be performed by the supporting linkage in the claimed

combination. Accordingly, the first inquiry on the issue of infringement is whether the word "flexible" in the phrase "flexible interconnection means" should be given its normal and customary meaning and thereby preclude the Meece patent claims from encompassing a rigid supporting linkage, such as a double acting hydraulic cylinder as used in the White tree shear. A second inquiry, independent of the first, is whether the double acting hydraulic folding cylinder of the White tree shear performs the specific functions required by 1(f) and 2(d) of the Meece patent claims for the supporting linkage.

[17] The issue of patent infringement is a question of fact. *Sterner Lighting, Inc. et al v. Allied Electric Supply, Inc.*, 431 F. 2d 539 (5th Cir. 1970); *U. S. Industries, Inc. v. Otis Engineering Corp.* 254 F. 2d 198 (5th Cir. 1958). The burden of proof in connection with the issue of patent infringement rests upon the patent owner to establish that the accused structure falls within the scope of the patent claims. *Phillips Petroleum Co. v. Sid Richardson Carbon & Gasoline Co. et al.* 416 F. 2d 10 (5th Cir. 1969); *Corning Glass Works v. Federal Glass Co.*, 239 F. 2d 674 (6th Cir. 1956); *Marvin Glass & Associates v. Sears Roebuck & Company*, ____ F. Supp. ____, 167 USPQ 33 (S.D. Tex. 1970).

[18] In order for there to be infringement of a combination patent claim, such as the Meece patent claims in suit, the accused structure must include each and every element or its equivalent described in the patent claim. *Reed v. Parrack*, 276 F. 2d 784 (5th Cir. 1960); *Stewart-Warner Corp. v. Lone Star Gas Company et al.*, 195 F. 2d 645 (5th Cir. 1952).

[19] A patent which has no pioneer status but is at most an improvement patent in a crowded art is entitled to protection only within the narrowest limits. *Stewart-Warner Corp. v. Lone Star Gas Co.*, supra. See also *Big "G" Distributing Co. v. Air Cleaner Service Co.*, 179 F. 2d 122 (5th Cir. 1950).

[20] Patents in a crowded art are limited ones and the claims thereof must be narrowly construed. *Sterner Lighting,*

Inc. v. Allied Electric Supply, Inc., et al., supra, at 544; *Texas Pit Service, Inc. v. Brackett*, 272 F. 2d 882 (5th Cir. 1959); *Stewart-Warner Corp. v. Lone Star Gas Company*, supra. The Meece patent being in a crowded art must be narrowly construed.

[21] Patents on simple combinations are not easily infringed. *Foster Cathead Co. v. Hasha*, 382 F. 2d 761 (5th Cir. 1967); *Texstream Corp. v. Blanchard*, 352 F. 2d 983, 986 (5th Cir. 1965), cert den. 387 U.S. 936 (1967); *Stewart-Warner Corp. v. Lone Star Gas Company*, supra.

[22] Words used in a patent should be given their ordinary and accustomed meaning unless it specifically appears from the patent that the inventor attached some different specific meaning to the word or words. *Universal Oil Products Co. v. Globe Oil Refining Co.*, 137 F. 2d 3 (7th Cir. 1943), affd. 211 U.S. 471 (1944); *Aircraftsmen, Inc. v. Aircraft Equipment Company*, 247 F. Supp. 469, 477-478, affd. *per curiam* 383 F. 2d 988 (5th Cir. 1967); *Godfrey L. Cabot, Inc. v. J. M. Huber Corporation*, 127 F. 2d 805, 807 (5th Cir. 1942). The Court concludes that the word "flexible" as appears in the Meece patent and as included in the pharase "flexible interconnection means" should be given its ordinary and accustomed meaning. Accordingly, the Meece patent claims in suit all describe three shears in which the support linkage is flexible or allow the shear head to freely move. The claims are not broad enough to include three shears in which the support linkage is substantially rigid.

[23] Patent claims should be interpreted so as to describe the embodiments of the patented subject matter illustrated in the patent drawings rather than to describe subject matter not illustrated. *Bocciarelli v. Huffman, 232 F. 2d 647 (CCPA 1956); Rule 83, Patent Office Rules of Practice.* The fact that the Meece patent drawings do not include an illustration of a double acting hydraulic cylinder as the support linkage is an indication that the Meece claims were never intended to include such structure.

[24] The word "comprises", when used in a patent claim such as the Meece patent claim 10, is synonomous with the word "includes" and does not preclude the presence of other elements as part of the described structure. *In Re Horwitz*, 168 F. 2d 522 (CCPA 1948); *In Re Cone*, 121 F. 2d 470 (CCPA 1941). See also *Robie v. Carlton*, 171 F. 2d 310 (CCPA 1948).

[25] The rules of the United States Patent Office have the force of law to the extent they are not inconsistent with the express provision of the patent statutes, and failure to comply with the rules is unlawful. *Potter Instrument Co., Inc. v. Mohawk Data Science Corp.*, 309 F. Supp. 866 (S.D.N.Y. 1970); See also *Piel v. Falkner*, ____ F. 2d ____, 165 USPQ 708 (CCPA 1970); *Land v. Dreyer*, 155 F. 2d 383 (CCPA 1946). *Rule 83, Patent Office Rules of Practice* requires that the patent drawings show every feature specified in the claims. Since the "adjustable hydraulic cylinder" recited in Meece patent claim 10 is not illustrated in the patent drawings, claim 10 must be invalid unless interpreted to include a flexible element in combination with the hydraulic cylinder as the support linkage.

[26] The claims of a patent should be construed in light of the Patent Office prosecution of the application which matured into the patent. *Graham v. John Deere Co. of Kansas City*, supra; *Waldon, Inc. v. Alexander Mfg. Co.*, 423 F.2d 91 (5th Cir. 1970); *Bros. Inc. v. W. E. Grace Mfg. Co.*, 351 F. 2d 208, 213 (5th Cir. 1965).

[27] Patents should be construed by the courts to be valid, if possible. In order to do so, a court may construe the patent claims narrowly so as to avoid the prior art. *Sterner Lighting, Inc. v. Allied Electric Supply, Inc.*, supra; *Beckman Instruments, Inc. et al v. Chemtronics, Inc., et al*, supra; *Marvin Glass & Associates v. Sears Roebuck & Company*, supra. But in so doing, a patent claim cannot be twisted one way to avoid the prior art and another way to establish infringement. *White v. Dunbar*, 119 U.S. 47, 30 L. Ed. 303 (1886); *Permo, Inc. v. Hudson-Ross, Inc.*, 179 F. 2d 386 (7th Cir. 1950); *Sterner Lighting, Inc. v. Allied Electric Supply, Inc.*, supra.

[28] A patent specification cannot expand the scope of the patent claims. *McClain v. Ortmayer*, 141 U.S. 419, 424 (1891). Accordingly, the reference to a "hydraulic cylinder" at column 4, lines 72-74 of the Meece patent specification cannot be relied upon to expand the scope of the phrase "flexible interconnection means" to include a rigid interconnection such as a double acting hydraulic cylinder.

[29] The Court concludes that when considering the evidence at the trial, the prior art, the prosecution history of the Meece patent and the antithetical qualities of rigidity and flexibility, a double acting hydraulic cylinder is a rigid and not a flexible connection. *Schriber-Schroth Co. v. Cleveland Trust Co.*, 305 U.S. 47, 58 (1938); *Baldwin-Lima-Hamilton Corp. v. Hi-Way Equipment Co.*, 250 F. Supp. 574 (S.D. Tex. 1965).

[30] Where a patentee elects to define an element of his claimed combination in terms of a "means" plus a function (as in the Meece claims "flexible interconnection means") it is essential for infringement that the corresponding means of the accused structure perform the same function in the same way to obtain substantially the same result. *Foster Cathead Co. v. Hasha*, supra; *McCutchen v. Singer Co.*, 386 F. 2d 82 (5th Cir. 1967); *Up-Right, Inc. v. Safeway Products, Inc.*, 315 F. 2d 23 (5th Cir. 1953). The Court concludes that the White cylinder does not perform the functions required for the "flexible interconnection means" of the Meece patent claims.

[31] The double acting hydraulic cylinder in the White tree shear structure is not equivalent to the "flexible interconnection means" of the Meece patented tree shear and, therefore, there can be no infringement. *General Steel Products Company v. Lorenz.* 204 F. Supp. 518, 531-533 (S.D. Fla. 1962) affd. 337 F. 2d 726 (5th Cir. 1964); *McCutchen v. Singer Company*, supra; *Signal Mfg. Co. v. Kilgore Mfg. Co.*, 198 F. 2d 667 (9th Cir. 1952). See also *Baldwin-Lima-Hamilton Corp. v. Hi-Way Equipment Co.*, supra.

[32] The grant of a subsequent patent carries weight in determining non-equivalence and raises a presumption of

non-equivalence. *Kokomo Fence Machine Co. v. Kitselman*, 189 U.S. 8, 23 (1902); *Edwards v. Johnston Formation Testing Corp.*, 44 F. 2d 607, 614 (S.D. Tex. 1930) (Judge Hutcheson), affd. 56 F. 2d 49 (5th Cir. 1932). See also *Walker on Patents* (Deller's Ed. 1937), §506, pp. 1758-1764.

[33] This Court concludes that the tree shear patented by defendant White has not infringed any of the Meece patent claims 1, 2, 5, 7 and 10. The accused machines lack that identity of means and identity of operation which must be combined with identity of result to constitute infringement. *Kokomo Fence Machine Co.*, supra at 24.

[34] Defendant is entitled to a judgment holding there has been no infringement by him of the Meece patent and judgment will be entered accordingly. Costs will be taxed upon application.

The Court finds it unnecessary to rule upon the counterclaim of defendant.

DONE and ORDERED in Chambers in Tallahassee, Florida, this 23rd day of February, 1971.

/s/ David L. Middlebrooks

David L. Middlebrooks
United States District Judge

CERTIFIED A TRUE COPY
Marvin S. Waits, Clerk

By _____
Deputy Clerk

APPENDIX B
IN THE

United States Court of Appeals

FOR THE FIFTH CIRCUIT

No. 71-2032

HARRINGTON MANUFACTURING CO., INC.,
Plaintiff-Appellant-
Cross Appellee,

versus

IDAS B. WHITE,
Defendant-Appellee-
Cross Appellant.

Appeals from the United States District Court for the Northern District of Florida

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(March 13, 1973)

Before BROWN, Chief Judge, GOLDBERG and MORGAN, Circuit Judges.

BROWN, Chief Judge: On June 27, 1967, the United States Patent Office issued Patent No. 3,327,745, to Fred W. Meece and Frank B. Dew, both of Plymouth, North Carolina. The patent covered a hydraulically powered "tree cutter device". On October

2, 1968, this lawsuit was filed by Meece and Dew's assignee, the Harrington Manufacturing Company, seeking damages and appropriate injunctive relief from Idas B. White for the latter's alleged infringement of the Meece-Dew patent. In addition to denying infringement, White asserted the invalidity of the Meece-Dew patent as a positive defense. Upon the conclusion of the non-jury trial, the District Judge entered a memorandum order and opinion upholding the validity of the Meece-Dew patent, but finding no infringement. Both parties appeal.

Our review of the case convinces us that the Court below properly upheld the validity of the Meece-Dew patent. Upon a close examination of his holding with respect to infringement, however, we are compelled to reverse. It all boils down to the question of how to construe three little words in the patent claims — "flexible interconnection means". The trial court applied a common meaning, common sense construction and held that the patent, by expressly contemplating the use of a "*flexible* interconnection means", did not envision — and hence would not protect — the use of an interconnection means, like a double acting hydraulic cylinder, which could be locked rigidly in place. But this ignores the basic purpose, the prosecution history, and — most importantly — the actual wording of the claims.[1] Giving appropriate consideration to

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[1]Since the claims of a patent establish, as would a deed an estate in land, the metes and bounds of the grant, Motion Picture Patents Co. v. Universal Film Manufacturing Co., 1917, 243 U.S. 502, 510, 37 S.Ct. 416, ——, 61 L.Ed. 871, 876, we set them out in full for all to read who will:

1. An improved tree cutting device including:
(a) a cutting blade.
(b) one end of said cutting blade being pivotably mounted with respect to a pair of fixed jaw members.
(c) fluid operated cylinder and piston means interconnecting said pair of jaw members and said cutting blade,
(d) two generally parallel supporting arms having their rear ends adapted to be pivotably attached to a vehicle,
(e) pivot means for pivotally interconnecting said two generally parallel supporting arms and said pair of fixed jaw members, so that said pair of fixed jaws can have limited pivotal movement about a horizontal axis,
(f) flexible interconnection means interconnected between said two generally parallel supporting arms and said pair of fixed jaw members which serves to limit the pivotal arc through which the fixed jaw members can pivot.

2. An improved tree cutting device including:
(a) a cutting blade.
(b) one end of said cutting blade being pivotably mounted with respect to a pair of fixed jaw members,
(c) fluid operated cylinder and piston means interconnecting said pair of jaw members and said cutting blade,
(d) said fixed jaw members being mounted for vertical pivotal movement about an elongated horizontally disposed beam, and said fixed jaw members being additionally connected to said elongated horizontally disposed beam by flexible interconnection means so that said fixed jaw members are free to move through a limited pivotal arc.
(e) two generally parallel supporting arms having their front ends attached to said beam and having their rear ends adapted to be pivotably attached to a vehicle, and
(f) means for raising and lowering said beam.

3. An improved tree cutting device according to claim 2, wherein said flexible interconnection means comprises a cable.

4. An improved tree cutting device according to claim 2, wherein said flexible interconnection means

these factors, we are convinced that these three little words sufficiently described the inventive concept of the patent, and in turn, that that concept is invaded by Defendant's device. The reading which we give to these three little words thus both sustains the trial court's holding of validity and requires us to reverse his holding of non-infringement.

I. Woodman, Don't Spare That Tree!

Modern civilization requires vast quantities of lumber and pulpwood for its progress. Originally man satisfied his need for timber by hacking down trees with crudely fashioned hand tools. As his need and sloth

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comprises a chain.

5. A tree cutting device according to claim 2, wherein said means for raising and lowering said beam comprises a hydraulic cylinder and piston.

6. A tree cutting device according to claim 2, wherein said jaw members are provided with a plurality of teeth.

7. An improved tree cutting device according to claim 2, wherein said flexible interconnection means includes an upstanding post on said beam, a connection means on the top of said jaws, and a flexible element interconnecting said upstanding post and said connection means.

8. An improved tree cutting device according to claim 7, wherein said flexible element comprises a chain.

9. An improved tree cutting device according to claim 7, wherein said flexible element comprises a cable.

10. A tree cutting device according to claim 1, wherein said flexible interconnection means comprises an adjustable hydraulic cylinder.

Plaintiff alleges that defendant White's shear infringes Claims 1, 2, 5, 7 and 10. He specifically points to the very precise wording of Claim 10 in terms of a hydraulic cylinder.

increased man invented the saw to cut through the wood more rapidly and efficiently. Even this innovation did not satiate society's appetite, however, and about twenty-five years ago man began using small gasoline powered chain saws. But even these paragons of technological advance had their problems — among them the fact that tired aching backs refused to wield them at ground level. Thus, by cutting the trees higher than ground level lumberjacks left a considerable amount of wood unused. These uncut stumps also marred the beauty of the landscape and impeded the progress of log removal from the forest.

Meece and Dew

In 1965 Meece and Dew bent their creative ingenuity towards rectifying these problems. They started by constructing the cutting device. It consisted of a fixed jaw, which would press against the backside of the tree, a blade to do the actual cutting, and a pair of hydraulic cylinders to close the blade. They called the whole assembly a "shear head". (See Figures A and B depicting the shear head in both the open and closed positions.)

FIG. A.

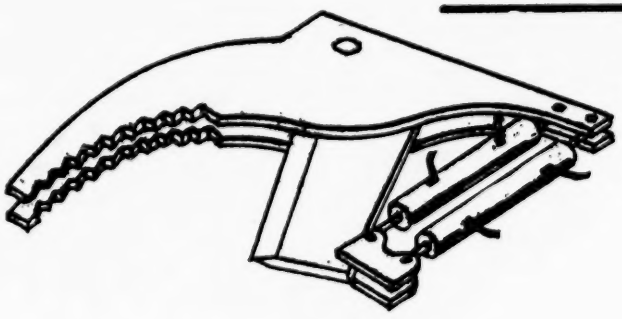
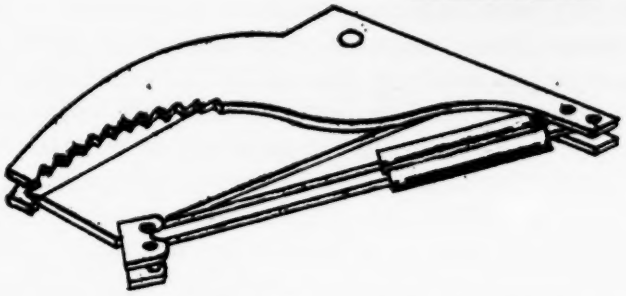


FIG. B.



Meece and Dew then designed a "C" frame to be used to attach the shear head to the tractor. It consisted principally of two parallel arms which were to be mounted to the sides of the tractor with movable joints. Across the front of these arms they welded a support beam. This beam was horizontal with the ground. In order to be able to elevate the entire shear head another hydraulic cylinder was mounted onto the front of the tractor and attached to the support beam.

The inventors then attached the shear head assembly to the support beam of the "C" assembly by means of several pivotal connections. This would allow the angle of the shear head to be adjusted according to the plane of the ground. This angular adjustment of the shear head was the "basic concept" of the Meece-Dew invention. It was the innovation calculated to solve the problems of stumpage which Meece and Dew had in mind. It was the Meece-Dew shear's "raison d'ètre".

Only one thing remained. Meece and Dew needed some element which would stabilize the shear head

in the angle of the plane of the ground. They conceived of several possible means to accomplish this end. But when they built their first model, Meece and Dew chose the means which appeared to be the most rugged, the easiest to put in place, the easiest to repair, and the least expensive, i.e. they used a chain, which was attached at one end to the shear head and at the other to a supporting post welded perpendicular to the beam. (See Figure C.)[2] In describing the various elements which could perform this task the patentees subsequently applied the fated nomenclature "flexible interconnection means".

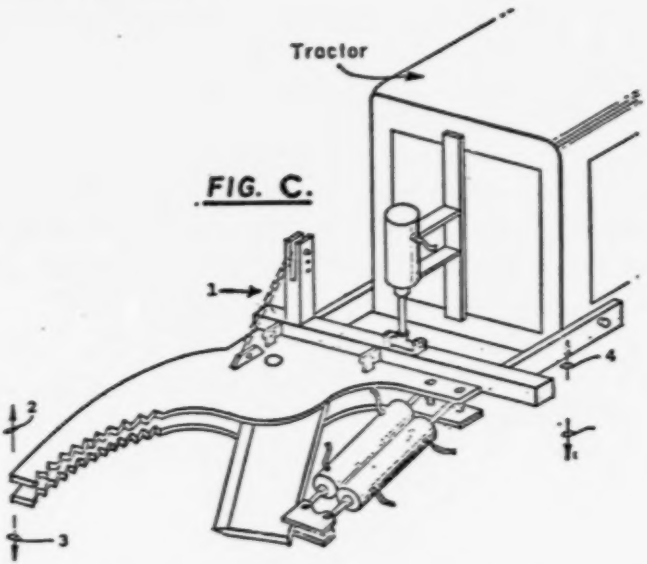


FIG. C.

[2]None of the hydraulic cylinders shown in this figure were the subject of this controversy. The White shear used a double acting hydraulic cylinder in place of the chain and post shown at point 1 in Figure C.

Meece and Dew demonstrated their tree shear to several interested parties in December 1965. By February 1966, the Plaintiff Harrington Manufacturing Company had acquired exclusive rights to the invention in exchange for an agreement to prosecute the patent application in Meece and Dew's behalf and make continuing royalty payments to them. By May 1966, Harrington was manufacturing the Meece-Dew shear and distributing it to its customers.

White

Meanwhile (that is in May, 1966) in Blountstown, Florida, the defendant Idas B. White was contacted by several unnamed individuals who requested that he build hydraulically operated tree shears for them. The resultant shear was field tested by White on July 30, 1966. The White shear was substantially identical to the Meece-Dew design, including the adjustable cutting head. Significantly, on first testing his shear White used a chain linkage support element. On finding this unsatisfactory he resorted to hydraulic cylinders.

Harrington-White Interaction

As assignee of the Meece-Dew patent rights Harrington was more than normally curious when he heard that someone in Blountstown, Florida, was building a tree shear similar to the Meece-Dew model which his company was then marketing. In August 1966, Joseph J. Harrington, Plaintiff's president, stopped to meet with White en route to Panama City, Florida, where the Harrington version of the Meece-Dew shear

had been displayed since June 1966. The trial court found that Harrington made a suggestion that White might manufacture hydraulic cylinders for use on the Meece-Dew shear head (see Figures A and B, *supra*), that both parties voiced their intentions to seek patents, that Harrington had the opportunity to observe a photograph of the White shear, and ultimately that Harrington offered to purchase White's patent rights.[3] Negotiations stalled and this suit followed. As first patentee of this design, Harrington has the paramount right to manufacture the Meece-Dew shear. *Southern Implement Manufacturing Co. v. McLemore*, 5 Cir., 1965, 350 F.2d 244, 248. Unless White can prove that the Meece-Dew patent was invalid, Harrington is entitled to relief if he proves that White's shear infringed the patent.

II. Up A Tree: Validity

Patents are a favored exception to the antitrust policies of the United States. While many patent advocates argue passionately that since they promote disclosure to society rather than exclusion from society that the term "monopoly" should not be applied patents, the better-reasoned view is that they are monopolies in the sense that they are governmentally protected rights to exclude others from the manufacture or sale of the patented article. Although the seventeen year duration is a built-in safeguard against extended abuse of the patent concession, society demands additional restric-

[3]On July 10, 1967, the Patent Office issued Patent No. 3,382,809 to Idas B. White covering his shear. Neither the validity nor the construction of that patent is at issue in this litigation.

tions. One such restriction is the availability of judicial review of the patent. Thus, the Supreme Court of the United States has held:

> There has been a tendency among the lower Federal courts in infringement suits to dispose of them where possible on the ground of non-infringement without going into the question of validity of the patent. It has come to be recognized, however, that of the two questions, validity has the greater public importance, and the District Court in this case followed what will usually be the better practice by inquiring fully into the validity of this patent.

Sinclair & Carroll Co. v. Interchemical Corp., 1944, 325 U.S. 327, 330, 65 S.Ct. 1143, ____, 89 L.Ed. 1644, 1646 (citations omitted). See also *Beckman Instruments, Inc. v. Chemtronics, Inc.*, 5 Cir., 1970, 428 F.2d 555, 557; *Sterner Lighting Inc. v. Allied Electrical Supply, Inc.*, 5 Cir., 1970, 431 F.2d 539. Finding the Meece-Dew tree shear patent to be one involving deep public interest, we carefully review the trial court's decision upholding the validity of the patent.

We start from the proposition that a lawfully issued patent is presumed to be valid. 35 U.S.C.A. § 282; *Railex Corp. v. Speed Check Co.*, 5 Cir., 1972, 457 F.2d 1040, 1043; Beckman Instruments, *supra* at 560; *Foster Cathead Co. v. Hasha*, 5 Cir., 1967, 382 F.2d 761, 764. Thus, the "burden of establishing invalidity of a patent shall rest on a party asserting it." 35 U.S.C.A. § 282.

The presumption of patent validity is rebuttable. 35 U.S.C. § 282; Radio Corp. of America v. Radio Engineering Laboratories, 1934, 293 U.S. 1, 55 S.Ct. 928, 79 L.Ed. 163. The courts, however, have not distinguished themselves for consistency in their determination of the quantum of proof necessary to rebut the presumption. For instance, this Court has employed varying statements of the necessary quantum of proof. *See, e. g.*, Kardulas v. Florida Machine Products Co., 5 Cir. 1971, 438 F.2d 1118 ("clear and convincing * * * a mere preponderance of the evidence is insufficient *** beyond a reasonable doubt"); V & S Ice Machine Co. v. Eastex Poultry Co., 5 Cir. 1971, 437 F.2d 422 ("competent evidence"); Stamicarbon, N. V. v. Escambia Chemical Corp., 5 Cir. 1970, 430 F.2d 920 (reviewing all the standards and approving the use of the beyond-a-reasonable-doubt standard); Kiva Corp. v. Baker Oil Tools, 5 Cir. 1969, 412 F.2d 546 ("beyond a reasonable doubt *** clear and convincing"); Metal Arts Co. v. Fuller Co., 5 Cir. 1968, 389 F.2d 319 ("clear, satisfactory, and, by some it is said beyond a reasonable doubt"); Zero Mfg. Co. v. Mississippi Milk Producers Assoc., 5 Cir. 1966, 358 F.2d 853 ("strong rebuttal"); Southern Implement Mfg. Co. v. McLemore, 5 Cir. 1965, 350 F.2d 244 ("beyond a reasonable doubt"); Samuelson v. Bethlehem Steel Co., 5 Cir. 1963, 323 F.2d 944 ("Any reasonable doubt will be resolved against the party alleging the invalidity of a pat-

> ent"); Fairchild v. Poe, 5 Cir. 1958, 259 F.2d 329 ("beyond a reasonable doubt"); Zachos v. Sherwin-Williams Co., 5 Cir. 1949, 177 F.2d 762 ("beyond a reasonable doubt"). We do not attempt to resolve this apparent inconsistency. Rather, we state that the presumption of patent validity may be rebutted only by a quantum of proof — whether it be called clear and convincing or beyond a reasonable doubt — which is greater than a mere preponderance of the evidence. One who seeks to rebut the presumption bears a heavy burden. *Cf.* Radio Corp. of America v. Radio Engineering Laboratories, 1934, 293 U.S. 1, 55 S.Ct. 928, 79 L.Ed. 163.[3]

Hobbs v. United States, 5 Cir., 1971, 451 F.2d 849, 856. See *Railex, supra* at 1043-44.

There are essentially three tests for patentability: utility, novelty, and non-obviousness. 35 U.S.C.A. §§ 101, 102, 103; Beckman, *supra* at 561; Hobbs, *supra* at 855. It is clear that the constitutionally required element "to promote the *useful* arts and sciences" is satisfied by the Meece-Dew invention. Likewise, our review of the case satisfies us that the statutorily articulated requirement[4] of non-obviousness is met. In this regard

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[4]Section 103 of the Patent Act of 1952 added this criterion. In *John Deere, supra*, the Supreme Court held that it was merely a codification of pre-1952 case law.

The test for obviousness under § 103 is whether the design of the patentee would have been a clear extension of previously existing principles to one possessing ordinary skill in the relevant prior art. See Ingersoll-Rand Co. v. Brunner &

we note that the Meece-Dew shear solved the plaguing problems of the industry with great commercial success. See *Graham v. John Deere Co.*, 1966, 383 U.S. 1, 17-18, 86 S.Ct. 684, ____, 15 L.Ed.2d 545, 556.

The issue of novelty, or phrased in another way — whether the invention was anticipated by the prior art, is quite another thing. Brandishing prior patents, White strenuously contends that the Meece-Dew concept was anticipated by the relevant prior art. Of the six prior patents listed by the Court and parties as being the relevant prior art it is undisputed that four were before the examiner in the Patent Office. White has clearly not introduced a whit of evidence to rebut the presumption of validity with respect to these patents.

But, in spite of the District Court's finding of fact to the contrary, White urges that the French Patent No. 1, 313, 995 and the Burke Patent U.S. No. 638,553, were not before the examiner. Of course the statutory presumption of validity, 35 U.S.C.A. § 282, is diluted when the patent was not issued after a consideration of the prior art. *American Seating Co. v. Southeastern Metals Co.*, 5 Cir., 1969, 412 F.2d 756, 760. Even a cursory examination of these patents, however, dispels the specter of anticipation.

Lay, Inc., 5 Cir., 1973, ____ F.2d ____ [No. 72-2026, February 20, 1973]. The trial judge here specifically found that no prior inventor had conceived the notion of mounting the cutting head of a shear so that it could pivot to parallel the plane of the ground. The Judge also held that the great commercial success which the Meece-Dew shear enjoyed was indicative of its non-obviousness. While not to be given controlling weight, this is certainly a permissible factor. *John Deere, supra; Ingersoll-Rand, supra.*

The French Patent consists of a shear head similar to the Meece-Dew design but mounted on a single, elongated, telescopic tubular arm extending from the front of the tractor. It adds nothing to the prior art of record. The ancient 1899 Burke Patent consisted of a [redacted] powered circular saw. Its only potential resemblance to the Meece-Dew design was the presence of a means to limit the downward motion of the cutting head. When one recalls the fact that the major innovation of Meece and Dew was the angular adjustment it becomes apparent that the Burke Patent's connection with the Meece-Dew patent is severely attenuated, if, indeed, it exists at all. In making this argument White is not only far-afield — he is out of the forest:

In a last ditch effort to salvage something from his invalidity argument White contends that even if the independent claims of the Meece-Dew patent are valid, that Claim 10, which specifically names a hydraulic cylinder as an alternative "flexible interconnection means", is invalid because either (i) the drawings in the patent application failed to disclose it, or (ii) White was a prior inventor with respect to this element.

A patent application does not have to graphically depict every conceivable element of the invention as long as it details the essential factors. "A rejection of the claim for lack of showing in the drawing alone is not tenable." Ex parte Taylor, Patent Office Board of Appeals, 1944, 66 U.S.P.Q. 366, 367. 4 Walker on Patents (2d ed. Deller 1965) § 247. *Cf. Up-Right, Inc. v. Safway Products, Inc.*, 5 Cir., 1963, 315 F.2d 23, 27.

Concerning White's argument that he was a prior inventor we only say that a patentee does not have to manufacture the full range of possible equivalents to his patent to satisy the 35 U.S.C.A. § 102(g) requirement of reasonable diligence to reduce to practice. If his basic ingenuity is fully disclosed and if he takes expedient steps to utilize his concept, a patentee will be allowed the protection of the law to the extent of his full range of equivalents.

III. Out On A Limb: Infringement

The major premise of the trial court's holding that the White shear did not infringe the Meece-Dew patent, was his conclusion of law that "the word 'flexible' as appears in the Meece patent and as included in the phrase 'flexible interconnection means' should be given its ordinary and accustomed meaning. Accordingly, the Meece patent claims in suit all describe tree shears in which the support linkage is flexible or allow the shear head to freely move. The claims are not broad enough to include tree shears in which the support linkage is substantially rigid."

His minor premise was a finding of fact: "The defendant tree shear employs a double acting hydraulic cylinder as the sole element of the supporting linkage between the shear head and mounting assembly. The testimony of the qualified expert witnesses establishes by a preponderance of the evidence that the double acting hydraulic cylinder and circuit as used in the White tree shear is a rigid and not a flexible interconnection."

Thus, from these two premises his obvious conclusion was "the double acting hydraulic cylinder in the White shear structure is not equivalent to the 'flexible interconnection means' of the Meece patented tree shear and, therefore, there can be no infringement."

A patent is infringed only if there is substantial identity between the accused device and the patented invention as to means, operation, and result. *Stewart-Warner Corp. v. Lone Star Gas Co.*, 5 Cir., 1952, 195 F.2d 645, 648; *Beckman Instruments, Inc. v. Chemtronics, Inc.*, 5 Cir., 1970, 428 F.2d 555, 563; *Sterner Lighting, Inc. v. Allied Electrical Supply, Inc.*, 5 Cir., 1970, 431 F.2d 539, 543; *U.S. Industries v. Otis Engineering Corp.*, 5 Cir., 1958, 254 F.2d 198; *McCutchen v. Singer Co.*, 5 Cir., 1967, 386 F.2d 82. Normally this poses a question of fact to be resolved by a jury or Judge sitting as fact-finder under F.R.Civ.P. 52(a), *Hughes Tool Co. v. Varel Manufacturing Co.*, 5 Cir., 1964, 336 F.2d 61; *Walker, supra* at § 511.

In the present case, our review of the case convinces us that the trial Judge misconstrued the claims of the Meece-Dew patent in formulating his major premise. Thus, we reverse without contesting the correctness of his findings of fact. See *Sterner Lighting, supra* at 543.

It is axiomatic patent law that improvement patents in a crowded art are to be construed narrowly. Since the frequently-asserted "anticipation" ground of invalidity calls for a factual determination, *Inglett & Co. v. Everglades Fertilizer Co.*, 5 Cir., 1958, 255 F.2d 342,

345; *Sterner Lighting, supra* at 541; the patentee's narrow contentions in the validity context often dovetail unwelcomed into his broad contentions with respect to infringement. But a "patent may not, like a 'nose of wax', be twisted one way to avoid anticipation and another to find infringement." *Sterner Lighting, supra* at 544, citing *White v. Dunbar,* 1886, 119 U.S. 47, 51, 7 S.Ct. 72, 74, 30 L.Ed. 303; *Permo, Inc. v. Hudson-Ross, Inc.,* 7 Cir., 1950, 179 F.2d 386.

Concerning the validity of the patent in suit, the District Court assessed the prior art and determined that

> Although certain constituent elements of the Meece patent were known in the prior art, the flexible interconnection means of the Meece patent produced a new and useful result and did not anticipate the prior art. It is this act of selection and arrangement of elements which, if it overcomes defects in the prior art, produces the invention and renders it novel.

Distilled to its essence, this statement indicates that the district court held that by designing the cutting jaws to pivot axially with respect to the horizontal support beam, Meece and Dew had made a patentable improvement on the prior art of tree-felling. Curiously, it is at this very point of novelty that the alleged infringement took place. But White seeks to distinguish his model from the Meece-Dew shear in two important respects: (i) the Meece-Dew patent specifically calls for a *flexible* interconnection means while the interconnection means in the White model is rigid, and (ii)

the functions performed by the double acting hydraulic cylinder on the White shear were beyond the realm of Meece-Dew inventiveness. We take them up in this order.

Lexicographic License

The central determinant of the infringement issue is whether the use of a hydraulic cylinder to vary the angle of the cutting blade in the White shear constitutes the requisite identity of means to the Meece-Dew patent. Contending that it does not, White directs our attention to the fact that the Meece-Dew patent calls for a "flexible interconnection means" to accomplish this function. He parrots the syllogistic reasoning which the trial Court articulated in its opinion: (i) According to the very words of the Meece-Dew patent only a means which is "flexible" would be an infringing copy; (ii) Once the position of a hydraulic cylinder is set it is rigid; and [redacted] Therefore, the hydraulic cylinder cannot possibly be an infringing means.

Harrington counters by strongly urging that the term "flexible interconnection means" means what they choose it to mean, and, accordingly, they are entitled to the mesnes. In support of this argument they cite the handy apothegm that a "patentee may be his own lexicographer and . . . his own grammarian."[5] *Inglett*

[5]The great treatise, in expounding the proper test for infringement, has specifically realized the efficacy of interpreting patent claims in accordance with the purpose and intent of the patentee rather than the common denotations of his choice of words:

"To allow literality alone to satisfy the infringement

& Co. v. Everglades Fertilizer Co., 5 Cir., 1958, 255 F.2d 342, 347. See *Thurber Corp. v. Fairchild Motor Corp.*, 5 Cir., 1959, 269 F.2d 841, 850; *Thermo King Corp. v. White's Trucking Service, Inc.*, 5 Cir., 1961, 292 F.2d 668, 675; *Chicago Steel Foundry Co. v. Burnside Steel Foundry Co.*, 7 Cir., 1943, 132 F.2d 812, 814; *Sockman v. Switzer*, 1967, 55 C.C.P.A. ____, 379 F.2d 996, 1002; *Burrett v. United States*, Ct. Cl., 1968, 405 F.2d 502, 507.[6]

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test would force patent law to reward literary skill not the inventor's creativity. Since the law is intended to benefit the inventor's genius and not the scrivener's talent, the structures must do the same work in substantially the same way and accomplish substantially the same result . . ."

7 Walker on Patents (2d ed. Deller 1972) § 531 at 307.

[6]The Court of Claims, in first accepting this rule, explained the difficulty which a Court faces when the inventor's chosen terminology does not adequately embrace the totality of his concept. Thus, the Court in a fascinating opinion by Judge Durfee concluded that resort must often be had to factors beyond the plain meaning of the chosen term:

> Courts occasionally have confined themselves to the language of the claims. When claims have been found clear and unambiguous, courts have not gone beyond them to determine their content. Keystone Bridge Co. v. Phoenix Iron Co., supra, 95 U.S. at 278, 24 L.Ed. 344; Borg-Warner Corp. v. Mall Tool Co., 217 F.2d 850 (7th Cir. 1954); Zonolite Co. and Insulating Concrete Corp. v. United States, 149 F.Supp. 953, 138 Ct.Cl. 114 (1957). Courts have also held that the fact that claims are free from ambiguity is no reason for limiting the material which may be inspected for the purpose of better understanding the meaning of claims. Warner & Swasey Co. v. Universal Marion Corp., supra, 237 F.Supp. at 737.
>
> We find both approaches to be hypothetical. Claims cannot be clear and unambiguous on their face. A comparison must exist. The lucidity of a claim is determined in light of what ideas it is trying to convey. Only by knowing the idea, can one decide how much

shadow encumbers the reality.

The very nature of words would make a clear and unambiguous claim a rare occurrence. Writing on statutory interpretation, Justice Frankfurter commented on the inexactitude of words:

> They are symbols of meaning. But unlike mathematical symbols, the phrasing of a document, especially a complicated enactment, seldom attains more than approximate precision. If individual words are inexact symbols, with shifting variables, their configuration can hardly achieve invariant meaning or assured definiteness.

Frankfurter, Some Reflections on the Reading of Statutes, 47 Col.L.Rev. 527, 528 (1947). See, also, A Re-Evalution of the Use of Legislative History in the Federal Courts, 52 Col.L.Rev. 125 (1952).

The inability of words to achieve precision is none the less extant with patent claims than it is with statutes. The problem is likely more acute with claims. Statutes by definition are the reduction of ideas to print. Since the ability to verbalize is crucial in statutory enactment, legislators develop a facility with words not equally developed in inventors. An invention exists most importantly as a tangible structure or a series of drawings. A verbal portrayal is usually an afterthought written to satisfy the requirements of patent law. This conversion of machine to words allows for unintended idea gaps which cannot be satisfactorily filled. Often the invention is novel and words do not exist to describe it. The dictionary does not always keep abreast of the inventor. It cannot. Things are not made for the sake of words, but words for things. To overcome this lag, patent law allows the inventor to be his own lexicographer. Chicago Steel Foundry Co. v. Burnside Steel Foundry Co., 132 F.2d 812 (7th Cir. 1943); Stuart Oxygen Co. Ltd. v. Josephian, 162 F.2d 857 (9th Cir. 1947); Universal Oil Products Co. v. Globe Oil & Refining Co., 137 F.2d 3 (7th Cir. 1943), aff'd 322 U.S. 471, 64 S.Ct. 1110, 88 L.Ed. 1399 (1944).

Allowing the patentee verbal license only augments the difficulty of understanding the claims. The sanction of new words or hybrids from old ones not only leaves one unsure what a rose is, but also unsure whether a rose is a rose. Thus we find that a claim cannot be interpreted without going beyond the

Because there was no extant generic phrase which would encompass all of the possible means to vary the angle of the cutting head, Meece and Dew's patent solicitor employed the phrase "flexible interconnection means". Reading the claims in light of the purpose and function to be served by the "interconnection means" we conclude that the term includes the use of a hydraulic cylinder.

The basic concept of the Meece-Dew patent — indeed, the major innovation which enabled their invention to pass the obviousness and novelty tests of validity — was that the plane of the shear's cutting head could be angularly adjusted. Perhaps the term "*ad-*

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claim itself. No matter how clear a claim appears to be, lurking in the background are documents that may completely disrupt initial views on its meaning.[6]

[4] The necessity for a sensible and systematic approach to claim interpretation is axiomatic. The Alice-in-Wonderland view that something means whatever one chooses it to mean makes for enjoyable reading, but bad law. Claims are best construed in connection with the other parts of the patent instrument and with the circumstances surrounding the inception of the patent application. Doble Engineering Co. v. Leeds & Northrup Co., 134 F.2d 78 (1st Cir. 1943). In utilizing all the patent documents, one should not sacrifice the value of these references by the "unimaginative adherence to well-worn professional phrases." Frankfurter, supra, at 529. Patent law is replete with major canons of construction of minor value which have seldom provided useful guidance in the unraveling of complex claims. Instead, these canons have only added confusion to the problem of claim interpretation. Doble Engineering Co. v. Leeds & Northrup, supra, at 84.

Autogiro Company of America v. United States, Ct. Cl., 1967, 384 F.2d 391, 396-97 (footnotes omitted).

justable interconnection means" would have more aptly described the means in terms of the end. But it is not the duty of this Court to rewrite the patent claims for Meece and Dew. Their able counsel, in choosing the term "flexible interconnection means" sought to convey the thought that the means could accomplish the end, i.e., variance of the angle of the cutting head. Viewed in the light of the basic concept of the Meece-Dew invention, the prosecution history, and the specific wording of Claim 10, the term necessarily includes the use of a hydraulic cylinder.

White has made much on this appeal about the fact that the Meece-Dew design required some "give" in the interconnection means to withstand the pressure from the natural reaction when the cut is completed and the tree falls. But a careful reading of the specifications reveals that the only time "give" is used in the patent is where the patentee described that quality which would allow the blade to be angularly adjusted so that it would rest on the ground and transmit most of the shock from the falling tree to the ground. Although the patentee clearly extolled the virtues of "give", it is manifest that "give" or "flexibility" in the sense of a self-adjustment to withstand shock was only an incidental benefit of the design. The basic concept of the Meece-Dew patent was one of adjustability. Thus, a hydraulic cylinder which could be adjusted to vary the angle of the shear head could function as a "flexible interconnection means" within the purview of the patent claims.

Our conclusion in this regard is compelled by the specific words of Claim 10 that in addition to the chain

and the cable which they had previously used as the interconnection means, a hydraulic cylinder might be used. Thus, Claim 10 specifically delineates as a part of the Meece-Dew invention the very thing which White's shear uses. This, of course, is in keeping with the basic concept of the patent as explained by the specifications:

> "Also, whereas a cable has been shown in FIGURES 1-5, a chain in FIGURE 6, and a chain or cable in FIGURES 7 and 8, the basic concept is that of having a means for varying the angle of the plane of the jaw members with respect to the beam. *Consequently, no invention would be involved in replacing flexible cable or chain with an obvious equivalent,*[7] *such as a hydraulic cylinder* . . . ." (Emphasis added).

This explication of the basic purpose of the invention puts the three little words — "flexible interconnection means" — in perspective. And given this perspective, we hold that the patentee/lexicographer intended to connote the adjustability of the shear head via

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[7]Our disposition on the explicit wording of Claim 10 precludes any foray into the range of protection which might be afforded to Harrington under the doctrine of equivalents. 35 U.S.C.A. § 112. In the past, we have held that "an inventor, with respect to his patent, is entitled to a range of equivalents commensurate with the scope of his invention." Up-Right, Inc. v. Safway Products, Inc., 5 Cir., 1965 315 F.2d 23, 27. See Bryan v. Sid W. Richardson, Inc., 5 Cir., 1958, 254 F.2d 191, 194; Southern Saw Service v. Pittsburgh-Erie Saw Corp., 5 Cir., 1956, 239 F.2d 339; Rosen v. Kahlenberg, 5 Cir., 1973 ____ F.2d ____ (Part II) [No. 71-3529, February 20, 1973]. They could have merely shown the chain and the cable in the drawings and thereafter relied on the courts to interpret what was an equivalent.

the "flexible interconnection means".*

The Cylindrical Argument

White makes much ado about the peculiar nature of the hydraulic cylinder. Specifically, he argues that a double acting hydraulic cylinder, because of its capability of rigidity, could not conceivably be the equivalent of a "flexible interconnection means". Thus, the argument goes, the Meece-Dew patent cannot be construed to "cover a double acting hydraulic cylinder as the sole element of the support linkage".

Contrasting the concepts of "rigidity" and "flexibility", the trial court found this line of reasoning to be persuasive. This is particularly so, according to the Court, where the double acting hydraulic cylinder on the White shear possesses attributes not heretofore proclaimed by Meece and Dew, e.g. the fact that the

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*So often the lexicographic license has been abused. In Thurber Corp. v. Fairchild Motor Corp., *supra*, we gave tribute to the prolixity of patent solicitors by setting forth in the margin 334 word unpunctuated sentence used in a patent claim. 269 F.2d at 850 n.7. Later, in Thermo King Corp. v. White's Trucking Service, Inc., *supra*, we lauded the new practice of drafting patent claims in understandable English with punctuational pauses and explanatory indentations. 292 F.2d at 675 n.9.

Juxtaposed with the claims of our past experience the Meece-Dew application is a model of clarity. It specifically states the claims in terms of means to accomplish ends, i.e. function. In the particular regard with which we are now concerned, it explicitly declares that:

> "Said fixed jaw members being additionally connected to said elongated horizontally disposed beam by flexible interconnection means so that said fixed jaw members are freely moved through a limited pivotal arc." Claim 2(d).

force of the cylinder can be used to crush brush, snow, or other debris from the base of the tree in order to cut the tree at the lowest possible point. But if the original patentee possessed the novelty of conception, the infringer may not claim non-infringement merely because he put the patented means to a novel use. *Beckman Instruments, Inc. v. Chemtronics, Inc.*, 5 Cir., 1970, 428 F.2d 555, 561; *Walker, supra* at § 563.

The District Court stated the identity of means test of infringement as follows:

> Where a patentee elects to define an element of his claimed combination in terms of a "means" plus a function (as in the Meece claims "flexible interconnection means") it is essential for infringement that the corresponding means of the accused structure perform the same function in the same way to obtain substantially the same results.

The trial court then found two functions which the interconnection means in the Meece-Dew shear served: [i] to permit free pivotal movement of the shear head, and [ii] to serve to limit the downward-most position of the arc through which the shear head could move. [(Finding 7)]. In the White shear the pressure of the cylinder against "toter brackets" performed the latter task. Thus, the result was not obtained solely by the hydraulic cylinder. [(Finding 15)].

It was in the former function, however, that the trial Judge found the crucial distinction between the Meece-Dew shear and the accused White shear. The Judge's interpretation of the Meece-Dew shear was that the interconnection means left the shear head "flexible". The White shear was "rigid". Given the antithetical quality of the words "flexible" and "rigid" the trial Judge concluded that there was no infringement as a matter of law. [(Conclusion 29)].

But what was needed was a temporal perspective. Both shear heads were "flexible" at some point in time. Basic to the entire superstructure was the fact that the shear head could be elevated or depressed to attain the proper cutting angle or to maneuver the tractor with the shear assembly. Likewise, both shear heads could be "rigid" when mounted with a hydraulic cylinder and locked into position. The crucial factor for the means was that it could attain the end of "adjustability". This was the crux of the Meece-Dew design.

This functional approach to patent claim construction is a legacy of *Hotchkiss v. Greenwood*, 1851, 52 U.S. (11 How.) 248, 13 L.Ed. 683; See *Graham v. John Deere Co.*, 1966, 383 U.S. 1, 12, 86 S.Ct. 684, ——, 15 L.Ed.2d 545, 553; *Foster Cathead Co. v. Hasha*, 5 Cir., 1967, 382 F.2d 761. We recognized the validity of describing elements of a patent in terms of "means" and function in *Bryan v. Sid W. Richardson, Inc.*, 5 Cir., 1958, 254 F.2d 191, 194, where we observed:

> The word "means" is no shibboleth. To be sure, it, or its equivalent synonyms, cannot be

> used to describe the invention at the very point of novelty for to do so would then be to define invention in terms of the result. But where the novelty of the combination ... is adequately disclosed with definable limitations, other and well-known elements need not be described in structural detail.

We have carefully weighed the arguments of both parties over the meaning of the term "hydraulic cylinder". Harrington contends that the term is a shorthand expression for "double acting hydraulic cylinder". White, on the other hand, points out the fact that a two-way push can be obtained from a double acting hydraulic cylinder, whereas only a one way action results from a single acting cylinder. This fact has obvious incidental benefits, e.g., the shear head can be both raised and lowered by hydraulic power, the force of the cylinder can crush any brush which surrounds the tree, etc. But the crucial property of the Meece-Dew shear was adjustability. And whatever its other benefits, the White double acting hydraulic cylinder accomplishes this function. Regardless of whether the hydraulic cylinder used as an interconnection means acts singly or doubly, it was contemplated by Meece and Dew as an alternative means to the original chain or cable and specifically delineated in Claim 10.

It is also helpful to consider the manner in which the patentees used the term "hydraulic cylinder". It appears not only in Claim 10 with respect to the "flexible interconnection means", but also in Claims 1(c), 2(c), and 5. Claim 5 is illustrative. There the patentees

claim a device which employs a hydraulic cylinder to *both raise and lower* the beam. (See Figure C, [redacted] *supra.)* Thus, it is evident that the patentees contemplated by the use of the words "hydraulic cylinder" a cylinder which could push two ways.

Therefore, whether single or double, the use by White of any hydraulic cylinder which could vary the angle of the cutting head with respect to the plane of the ground constitutes an infringement in derogation of the patent rights of Harrington.

IV. Can't See The Trees For The Forest

Letter patents serve to foster the constitutional mandate to promote the arts and sciences. If courts undermine the rights of patentees, not by a narrow construction of the scope of the invention, but rather on the basis of semantical facades, then the utility of a patent as a stimulus for greater public disclosure of private inventiveness will be greatly minimized and more inventors will resort to whatever protection the trade secrecy law may afford. *Cf. United States v. Dubilier Condenser Corp.*, 1933, 289 U.S. 178, 53 S.Ct. 554, 77 L.Ed. 1114; *Sears, Roebuck & Co. v. Stiffel Co.*, 1964, 376 U.S. 225, 84 S.Ct. 784, 11 L.Ed.2d 661; *Compco Corp. v. Day-Brite Lighting, Inc.*, 1964, 376 U.S. 234, 84 S.Ct. 779, 11 L.Ed.2d 669. The main thesis of our patent system is that public disclosure is a worthy goal.

Meece and Dew designed the first tree shear to employ an angularly adjustable cutting head. This invention presented a significant and patentable improve-

ment over the prior art in that it allowed the tree to be cut parallel to the ground at its lowest point. Not only did this provide more useable wood per tree, but it also reduced the logistical problems of reseeding and — for that band of hardy conservationists now tramping the woods in search of nature, the red-cheeked warbler, see *Allison v. Froehlke*, 5 Cir., 1973, ____ F.2d ____ [No. 72-2219], a pure environment, and possible class actions — it enhanced the aesthetic quality of a now-stumpless forest.

By marketing a shear employing this basic concept of the Meece-Dew design without a license from the patent owner, the defendant White has infringed on the dominant patent of the Plaintiff. Accordingly, this case is reversed and remanded to the District Court for imposition of the appropriate remedies.

REVERSED AND REMANDED.

Adm. Office, U.S. Courts—Scofields' Quality Printers, Inc., N. O., La

APPENDIX C

United States Court of Appeals

FOR THE FIFTH CIRCUIT

October Term, 19 72

No. 71-2032

D. C. Docket No. 1443

HARRINGTON MANUFACTURING CO., INC.,

Plaintiff-Appellant-Cross Appellee,

versus

IDAS B. WHITE,

Defendant-Appellee-Cross Appellant.

Appeal from the United States District Court for the Northern District of Florida

Before BROWN, Chief Judge, GOLDBERG and MORGAN, Circuit Judges.

J U D G M E N T

This cause came on to be heard on the transcript of the record from the United States District Court for the Northern District of Florida, and was argued by counsel;

ON CONSIDERATION WHEREOF, It is now here ordered and adjudged by this Court that the judgment of the said District Court in this cause be, and the same is hereby, reversed; and that this cause be, and the same is hereby remanded to the said District Court with directions in accordance with the opinion of this Court;

It is further ordered that defendant-appellee-cross appellant pay to plaintiff-appellant-cross appellee the costs on appeal to be taxed by the Clerk of this Court.

March 13, 1973

Issued as Mandate: JUN 15 1973

APPENDIX D

IN THE

United States Court of Appeals

FOR THE FIFTH CIRCUIT

No. 71-2032

HARRINGTON MANUFACTURING CO., INC.,
Plaintiff-Appellant-
Cross Appellee,

versus

IDAS B. WHITE,
Defendant-Appellee-
Cross Appellant.

Appeals from the United States District Court for the Northern District of Florida

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ON PETITION FOR REHEARING AND PETITION FOR REHEARING EN BANC

(Opinion March 13, 1973, 5 Cir., 1973, ____ F.2d ____).

(June 7, 1973)

Before BROWN, Chief Judge, GOLDBERG and MORGAN, Circuit Judges.

PER CURIAM: The Petition for Rehearing is DENIED and no member of this panel nor Judge in regu-

lar active service on the Court having requested that the Court be polled on rehearing en banc, (Rule 35 Federal Rules of Appellate Procedure; Local Fifth Circuit Rule 12) the Petition for Rehearing En Banc is DENIED.

Adm. Office, U.S. Courts—Scofields' Quality Printers, Inc., N. O., La.

APPENDIX E

June 27, 1967 F. W. MEECE ETAL 3,327,745

TREE CUTTER DEVICE

Filed Oct. [illegible], 1966 3 Sheets-Sheet 1

FIG. 1.

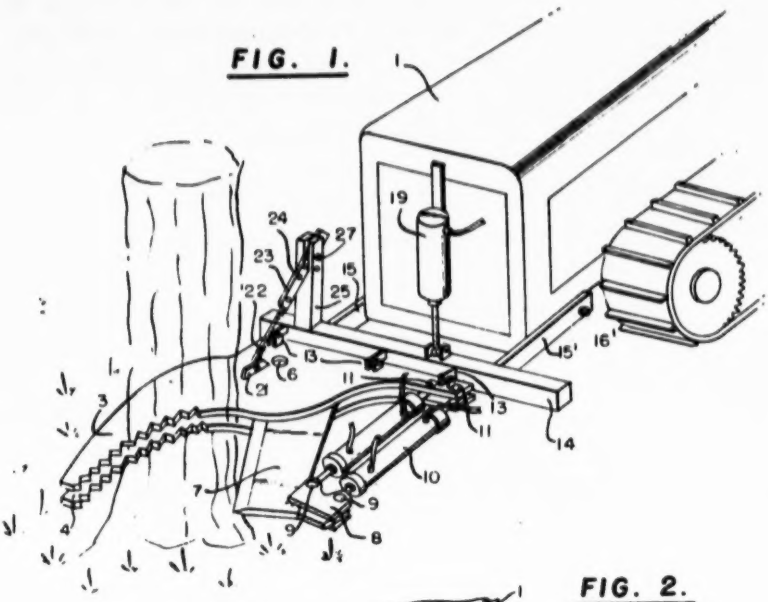
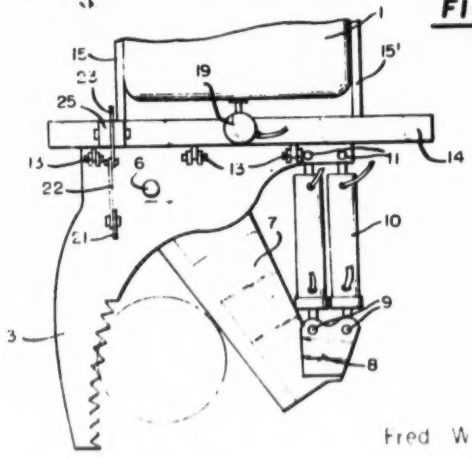


FIG. 2.



INVENTORS

Fred W. Meece E[illegible]

Frank B. Dew

June 27, 1967 F. W. MEECE ETAL 3,327,745

TREE CUTTER DEVICE

Filed Oct. 3, 1966 3 Sheets-Sheet 2

FIG. 3.

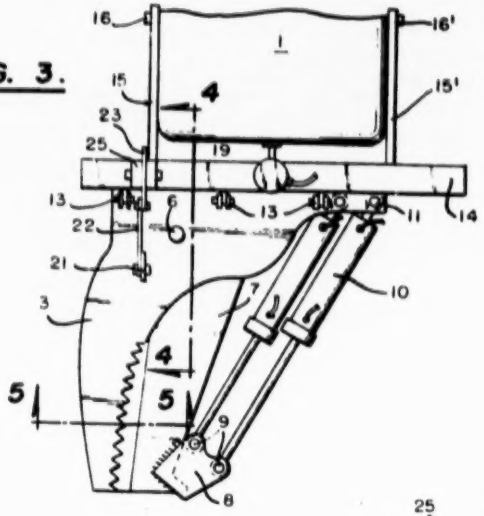


FIG. 4.

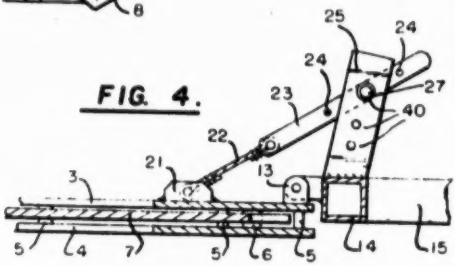
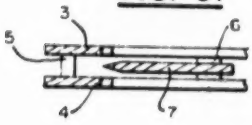


FIG. 5.



INVENTORS

Fred W. Meece &

Frank B. Low

June 27, 1967 F. W. MEECE ETAL 3,327,745

TREE CUTTER DEVICE

Filed Oct. [illegible], 1966 3 Sheets-Sheet [illegible]

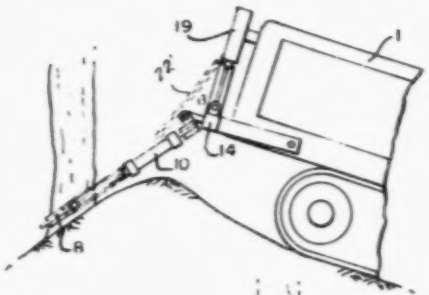


FIG. 7.

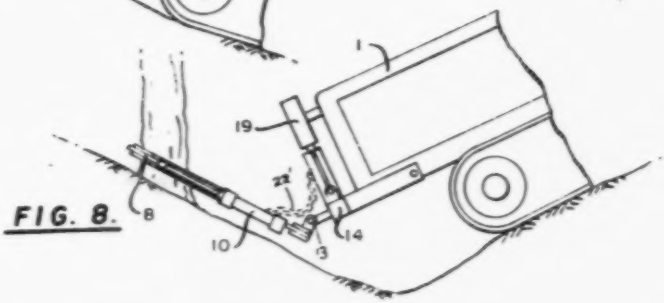


FIG. 8.

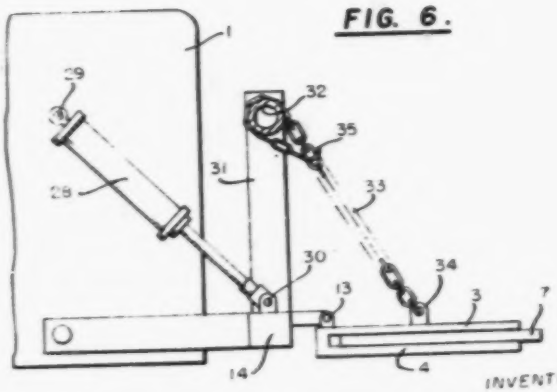


FIG. 6.

INVENTORS

[illegible] & [illegible]

Frank B. Dew

United States Patent Office

3,327,745
Patented June 27, 1967

3,327,745

TREE CUTTER DEVICE

Fred W. Meece, Washington, and Frank B. Dew, Plymouth, N.C., assignors to Harrington Manufacturing Company, Lewiston, N.C., a company of North Carolina

Filed Oct. 5, 1966, Ser. No. 584,516
10 Claims. (Cl. 144—34)

The lumber and pulpwood industries require large quantities of logs each day in order to maintain continuous operation. At one time all of these logs were supplied by crews of men with axes and saws working their way through a tract of woodland. Within the last twenty years, chain saws operated by small gasoline motors were introduced and this greatly reduced the actual physical labor involved in felling a tree. Although a great number of chain saws are still in use by lumbermen, the diminishing supply of labor and its increasing cost have forced the lumber and pulpwood industries to look for other means for felling trees at less cost and greater speed. The trend now clearly seems to be toward cutting devices mounted on tractors or other vehicles, and powered by one or more hydraulic pistons. One such tractor-mounted cutting device can do the work of many men equipped with chain saws. The following patents are representative of those that have issued since 1940 on tree cutting devices mounted on tractors or similar vehicles: 2,214,334, 2,228,635, 2,493,696, 2,529,934, 2,565,252, 2,697,459, 2,751,943, 2,820,493, 2,845,101, 2,876,816, 2,955,631, 2,981,301, 3,059,677, 3,122,184, 3,183,949, 3,183,952, 3,183,953, 3,183,954, 3,196,726, 3,196,911, and 3,230,988.

Devices of the above type have the advantage that (a) the tractor can move through heavy underbrush more quickly and easily than men with chain saws, (b) tree felling is less at the mercy of unfavorable weather and soil conditions, (c) the comparatively delicate and erratic performance of chain saws is avoided, and (d) the movement of the tractor through a wooded area in the normal course of its tree felling operations automatically smooths the way for subsequent log removing operations by crushing down the heavy underbrush which often surrounds the trees.

Since the basic idea of mounting hydraulically driven shears on a tractor and using it to cut down trees is now

about thirty years old (see Knight Patent 2,214,334), the inventors in this field have primarily directed their attention toward solving certain problems associated with this basic operation.

One problem which has not been solved thus far is the problem of being able to cut trees so that the stump will follow the contour of the ground [illegible] on an uphill slope or on a downhill slope. This problem has probably escaped the attention of many inventors because so many logging operations are carried out on essentially level ground. However, the problem is an important one since with the increasing use of wheeled or tracked vehicles to remove logs after they are felled, every precaution must be taken not to leave stumps that will obstruct or disable the wheels or tracks of such vehicles. When the wheel or track of a log hauling vehicle is disabled by a protruding stump, the entire logging operation is often halted, which is both expensive and wasteful of machines and manpower.

Furthermore, even ground which seems to be quite level, is not really level insofar as a tractor is concerned because the presence of fallen trees, stump holes, old stumps and heavy brush in the area where the tractor is to cut timber in effect makes the ground quite unlevel. In fact, due to the presence of fallen trees, stump holes, old stumps and heavy brush, the tractor is probably not level 50% of the time.

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The present invention relates to an arrangement for use primarily on tractors whereby, through the use of fluid operated shears, it becomes possible to station the shears at any desired point near the lower part of a tree and thereafter operate the shears to cut through the trees at or very near the level of the ground so that the top surface of the remaining stump can be made substantially parallel to the ground regardless of the contour of the ground and regardless of the presence of fallen trees, stump holes, old stumps and heavy brush. The cutting device of this invention permits better adjustment of the cutting blades angle both before and during the cutting operation. Trees may be cut or sheared closer to the ground than by any other means. This results in more wood utilization and a better quality of wood.

When a tractor equipped with the tree-cutting device of this invention is also equipped with a heater or an air-conditioner, tree cutting work can be carried on during the entire year at peak efficiency, regardless of the weather, enabling an operator to cut many times as much, even in heavy underbrush, as his walking chain-saw-carrying counterpart. There is no need to postpone tree cutting operations until the underbrush is cleared out. The present invention takes most of the physical labor out of

stumping and reduces the hazards of nature. It also permits a wider range of personnel to be used for the stumping work. A new operator can directionally fell trees with very little training. The fact that the present tree cutting device cuts stumps so close to the contour of the ground avoids the possibility that skidding and reseeding equipment which is later used over the cut area will be damaged by protruding stumps. The tree-cutting device of this invention delivers *many times* the production possible from a man with a chain saw.

A primary object of this invention is to provide a mounting for a timber shear device which is adjustable to position the blade of the timber shear device parallel to the ground, regardless of the slope of the ground.

A further object is to provide a timber shear device, which may be adjusted both as to the height and the slope of the ground.

Another object of this invention is to provide a cutting attachment of the type described which is suitable for ready mounting and removal from conventional tractor-type vehicles, such unit having blade elements to sever trees and guide elements to control the direction or fall of trees and eliminate or reduce the risk of damage to the vehicle or injury to its operator.

Still another object of this invention is to provide a cutter of the type described, which is simple in operation, economical of manufacture and sufficiently rugged to withstand the severe conditions resulting from its field of employment.

With the foregoing and and other objects in view, all of which will become clearer as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in construction and arrangement of the parts without departing from the spirit of the invention as claimed.

In the accompanying drawings preferred forms of the invention have been shown, in which:

FIGURE 1 shows a perspective view of our improved timber shear mounting structure;

FIGURE 2 is a partial plan view thereof with the blade open;

FIGURE 3 is a partial plan view thereof showing the blade closed;

FIGURES 4 and 5 are side elevations along 4 - 4 and 5 - 5 respectively of FIGURE 3;

FIGURE 6 is a side elevation of another embodiment of the invention; and

FIGURES 7 and 8 are side elevations showing how the timber shear of this invention would work on inclined slopes.

Referring now more particularly to the drawings, wherein like numerals refer to like parts in the various views, **1** represents a conventional tractor upon which the timber shearing device of this invention is mounted.

The main element of the shearing device is an elongated blade member **7** that is preferably generally L-shaped in overall plan view, although the precise shape is not critical. One end of (i.e. the inner end) said blade member **7** is mounted on a pivot pin **6** so that the blade can be pivoted through a limited arc. The pivot pin **6** is securely fixed between two fixed jaw members **3** and **4** that may be considered as generally L-shaped. The jaw members **3** and **4** are preferably provided with teeth to assist in gripping the tree that is to be cut.

The jaw members **3** and **4** are disposed in a generally parallel relationship to each other and are held apart a fixed distance by one or more spacer means **5** of the type shown in FIGURES 4 and 5.

A pair of fluid operated cylinder and piston means **10** are shown pivotally connected to one end of the fixed jaw members **3** and **4** by means of pins **11** and also pivotally connected to an extension **8** welded on the outer end of the blade member **7** by means of pins **9**. If desired, a single cylinder and piston means can be used rather than the two shown. In operation, the cylinder and piston means **10** (when supplied with fluid pressure) move the blade **7** toward and to a limited extent between fixed jaws **3** and **4** to thereby cut through a tree trunk.

Referring now to the support arrangement, it will be noted that two generally parallel supporting arms **15** and **15'** have their front ends attached to a beam **14** at spaced apart points and the rear ends supporting arms **15** and **15'** are adapted to be pivotably attached to suitable pivot points **16** and **16'** located on the sides of vehicle **1**.

A lifting means in the form of a hydraulic cylinder **19** is provided so that by having its upper end connected to the vehicle **1** and its lower end connected to the beam **14**, the beam can be suitably raised or lowered. FIGURE 6 shows another arrangement wherein the beam **14** can be positioned at any desired level by a cylinder **28** mounted at an angle to the horizontal and which is secured by a bolt **29** to the side of the tractor body, and by pins **30** to the beam **14**.

An important feature of novelty of this invention is the particular way in which the jaw members are connected to the beam **14**. We have discovered that these jaw members should first of all be mounted for vertical pivotal movement with respect to the elongated horizontally disposed beam **14**, preferably by means of a plurality of pivot members **13**. In addition to said pivotal mounting, there should be a flexible interconnecting means between said jaw members and said beam **14**, such flexible interconnecting means serving to establish the maximum arc through which the jaw members can freely move with respect to the beam **14**.

One form of a suitable flexible interconnecting means is shown in FIGURES 1–5, and is seen to consist of an upstanding post member **25** located on beam **14**, cable **22** and a bar **23** (having a plurality of holes **24** therein) that extend between post member **25**, and a lug **21** located on the upper fixed jaw **3**. The holes **24** in bar **23** and a series of holes **40** in post member **25** can be aligned and a bolt **27** inserted therethrough so as to establish the maximum extent to which the fixed jaws **3** and **4** can pivot about the beam **14**.

FIGURE 6 shows another flexible interconnecting means comprising an upstanding post **31** located on beam **14** that has a tubular bar **32** extending therefrom. One end of chain **33** is connected to ear **34** on the upper jaw

member **3**, and at the other end is brought over the tubular member **32**. The end of the chain has a hook **35** which may be connected to any desired link. The maximum extent to which jaw members may pivot with respect to the beam **14** may be adjusted by unhooking the chain at hook **35**, setting the jaws to the desired position and then pulling the chain taut and hooking it.

With the above described arrangements, an operator usually first adjusts the level of the shear blade with respect to the ground by first supplying fluid pressure to cylinder **19** so as to raise or lower the beam **14** to the desired level. The operator then checks to make sure that the cable **22** (or chain **33**) has enough slack in it so that that jaws and blade can rest either on the ground near the base of the tree or only a short distance above the ground and parallel to it. If the jaws and blade do not rest in the aforesaid desired positions, then the operator should adjust the cable or chain until there is sufficient slack to permit these positions. As a general rule, the operator can operate over a considerable portion of a wooded tract by providing sufficient slack so that the plane of the fixed jaws can drop freely to the position shown in FIGURE 7 (i.e. up to about 45°) or raise to about 45° as is shown in FIGURE 8.

It is thus seen that the blade is able to cut off a tree so that the surface of the remaining stump conforms to the contour of the ground and does not project above the ground to a sufficient degree to present an obstacle to the movement of other vehicles.

The aforesaid flexible interconnecting means of this invention not only permits the blade and jaws to follow the contour of woodlands with an undulating surface, but it also affords a measure of protection to the jaws and blade after the tree is cut and is falling. In other words, falling trees topple until the top of the tree hits the ground, but when the top of the tree hits the ground, the severed trunk portion often momentarily is fulcrumed into the air by virtue of the branches on the tree, and immediately thereafter the raised severed trunk portion

comes slamming back down to earth again. More often than not, when the severed trunk slams down, it slams down on top of the jaws and the blade. If the jaws and blade were not pivotally and flexibly interconnected as we have described above, the force of the descending trunk could easily break the blade and/or jaws. Our arrangement provides some "give" so that even if the severed trunk slams down on the jaws and blade, this force is largely transmitted to or absorbed by the ground upon which the jaws and blade are resting by virtue of the pivotal connection to beam **14** and the flexible interconnecting means. Our invention is therefore quite valuable in that it has a built-in safety feature that reduces wear and tear on the timber shear and avoids many costly disablements of the machine that might otherwise occur.

FIGURES **7** and **8** illustrate more clearly how the present invention enables a timber shear to cut trees substantially parallel to the ground regardless of whether the tree is over the crest of a hill with respect to the tractor or across a small valley with respect to the tractor. (The blade **8** and piston **10** would usually be flat on the ground in actual practice, but for the purpose of clarity of illustration, the blade **8** and the piston **10** are shown raised slightly above the ground.) In FIGURE **7** the chain or cable **22'** is shown as being slack and in FIGURE **8** taut. However, it would also be possible to have the chain or cable **22'** slack in the FIGURE **7** arrangement and taut in the FIGURE **8** arrangement. Also, whereas a cable **22** has been shown in FIGURES 1–5, a chain **33** in FIGURE **6**, and a chain or cable in FIGURES **7** and **8**, the basic concept is that of having a means for varying the angle of the plane of the jaw members with respect to the beam **13**. Consequently, no invention would be involved in replacing flexible cable **22** or chain **33** with an obvious equivalent, such as a hydraulic cylinder or in using a cable or chain in conjunction with a flexible cylinder or

heavy spring, or in using a chain or cable in conjunction with a turnbuckle, or a piston with a "[illegible] free circuit."

It is thus seen that the pictorial invention provides a hydraulically operated tree-cutting device which can easily be mounted on the front end of a crawler-type tractor and which can utilize the existing hydraulic system of the tractor for both moving the blade and positioning the blade with respect to the tree to be cut. The special way in which this cutting unit is mounted permits the operator to approach very closely to a tree and to cut off the tree cleanly at virtually ground level regardless of the incline of the ground.

While the invention has been particularly described in connection with trees, it will be understood that it is also applicable to heavy brush and foliage that are not exactly classified as trees. Also, whereas the invention has been

particularly described in relation to tractors, the invention could just as well be used with a number of other types of vehicles that are not strictly characterized as tractors.

In conclusion, while there has been illustrated and described some preferred embodiments of our invention, it is to be understood that since the various details of construction may obviously be varied considerably without really departing from the basic principles and teachings of this invention, we do not limit ourselves to the precise constructions herein disclosed and the right is specifically reserved to encompass all changes and modifications coming within the scope of the invention as defined in the appended claims. Having thus described our invention, what we now claim as new and desire to secure a United States Letters Patent on is set forth in the following claims.

What is claimed is:

1. An improved tree cutting device including:

(a) a cutting blade,

(b) one end of said cutting blade being pivotably mounted with respect to a pair of fixed jaw members,

(c) fluid operated cylinder and piston means interconnecting said pair of jaw members and said cutting blade,

(d) two generally parallel supporting arms having their rear ends adapted to be pivotably attached to a vehicle,

(e) pivot means for pivotally interconnecting said two generally parallel supporting arms and said pair of fixed jaw members, so that said pair of fixed jaws can have limited pivotal movement about a horizontal axis,

(f) flexible interconnection means interconnected between said two generally parallel supporting arms and said pair of fixed jaw members which serve to limit the pivotal movement through which [illegible]

2. An improved tree cutting device including:

(a) a cutting blade,

(b) one end of said cutting blade being pivotably mounted with respect to a pair of fixed jaw members,

(c) fluid operated cylinder and piston means interconnecting said pair of jaw members and said cutting blade,

(d) said fixed jaw members being mounted for vertical pivotal movement about an elongated horizontally disposed beam, and said fixed jaw members being additionally connected to said elongated horizontally disposed beam by flexible interconnection means so that said fixed jaw members are free to move through a limited pivotal arc,

(e) two generally parallel supporting arms having their

front ends attached to said beam and having their rear ends adapted to be pivotably attached to a vehicle, and

(c) means for raising and lowering said beam.

3. An improved tree cutting device according to claim 2, wherein said flexible interconnection means comprises a cable.

4. An improved tree cutting device according to claim 2, wherein said flexible interconnection means comprises a chain.

5. A tree cutting device according to claim 2, wherein said means for raising and lowering said beam comprises a hydraulic cylinder and piston.

6. A tree cutting device according to claim 2, wherein said jaw members are provided with a plurality of teeth.

7. An improved tree cutting device according to claim 2, wherein said flexible interconnection means includes an upstanding post on said beam, a connection means on the top of said jaws, and a flexible element interconnecting said upstanding post and said connection means.

8. An improved tree cutting device according to claim 7, wherein said flexible element comprises a chain.

9. An improved tree cutting device according to claim 7, wherein said flexible element comprises a cable.

10. A tree cutting device according to claim 1, wherein said flexible interconnection means comprises an adjustable hydraulic cylinder.

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